

## Least-Toxic Pesticides List - Revised 2021

Source: Linda A. Gilkeson

A 2016 change to the provincial regulations limits what unlicensed people can buy to a specific list of least-toxic pesticides. In municipalities with bylaws restricting pesticide use, the municipal bylaw has priority over the provincial regulations. Most products listed below are for residential use and have 'DOMESTIC' on the label.

As noted, a couple of pesticides are currently only available in products registered for Commercial use, which home gardeners cannot buy, but it is worth knowing about them in the event a Domestic labelled product becomes available. Products named are not necessarily approved for certified organic growers (consult Organic Materials Research Institute or local organic certification bodies for accepted products).

### INSECT CONTROL

**Bacillus thuringiensis kurstaki** [*Safer's BTK Biological Insecticide; Rona BTK; DiPel*]

- Contains a common species of soil bacteria; they produce spores and protein crystals that infect and kill caterpillars.
- Non-toxic to other insects, animals and people. Non-persistent, breaks down in a few days.
- Use to control leaf-eating caterpillars in greenhouses, food crop and gardens, and on ornamentals.
- Spray foliage while caterpillars are actively feeding; caterpillars stop feeding immediately but may not die for 2-5 days.

**Bacillus thuringiensis galleriae** [*grubHALT! BeetleGone; Scotts Grub-B-Gon Beetle Killer*]

- Similar properties to above but the bacteria are specific to beetle larvae.
- Use to control larvae of June beetles, European chafer, Japanese beetle in turf and ornamentals
- Granules are broadcast over turf when target larvae are present (e.g., July for E. chafer).
- Watering well (1.5 cm) or moderate rainfall shortly after application improves performance

**Horticultural (Supreme) Oils: Dormant & Summer Oils** [*Green Earth, Wilson's products*]

- Contains highly refined petroleum oil, or canola oil; acts upon contact, by suffocation and by disrupting other physical processes; there are no residual effects.
- Dormant oil controls overwintering eggs of aphids, some moths, mealybugs, pear psylla, pear and rose sawflies, scales, spider mites. Summer oil controls mealybugs, rust mites, scales, spider mites, whiteflies.
- Use dormant oils on deciduous woody plants after leaves drop, or before growth starts. Use summer oils on shrubs and trees during the growing season, but not in hot weather.
- Always check labels for list of plants that cannot tolerate oil sprays.

**Insecticidal Soap** [*Safer's, Scotts, Green Earth products*]

- Contains biodegradable fatty acids; acts upon contact against insects and mites; no residual effects.
- Used on aphids, earwigs, mealy bugs, pear and rose slugs, solids, scales, spider mites, whiteflies and other insects; outdoors and indoors.
- Thorough spraying required; repeat applications may be necessary but limit the number of times it is used on the same foliage as it can damage leaves.
- Phototoxic to some plants (check labels).

**Silicon Dioxide (Diatomaceous Earth)** [*Doktor Doom GoGreen; Green Earth, Scotts Ecosense, Safer's products*]

- Contains ground up fossilised shells of diatoms mined from natural deposits.
- Acts upon contact against insects by causing them to dry up; kills most insects that contact it.
- Non-toxic to people, animals, birds, fish, earthworms.
- Long residual effects, if kept dry and not dispersed; kills beneficial insects, therefore, limit use on outdoor plants to spot treatments.

**Pyrethrins** [*Safer's; Scotts Ecosense, Green Earth products; Doktor Doom Botanic*]

- Active ingredients extracted from pyrethrum daisies; a nerve toxin that acts upon contact.
- Used on crawling and flying insects on plants, pets, indoors and outdoors. Non-persistent.
- Moderate toxicity, avoid inhalation or contact with skin and eyes; may cause allergic reactions in sensitive people.
- A last resort pesticide.

**Spinosad** [*Conserve Domestic Naturalyte*]

- Controls many leaf eating caterpillars and beetles, thrips and other insects.
- Compound extracted from soil bacteria. Fast-acting, remains active up to 4 weeks once sprayed on leaves. Highly toxic to bees and parasitic insects at time of spraying; low risk once spray residues dry.
- Do not apply to squash family plants. Avoid spray drift to water bodies.
- Limit the number of applications to any one plant to 3 times per year.

**Kaolin Clay** [*Surround Crop Protectant - Commercial*]

- Fine clay particles applied in a spray; forms a white barrier film when dry.
- Not registered or suitable for ornamentals.
- Clay barriers have repellent, anti-feedant effects on caterpillars, sawflies, apple maggot and other fruit flies, tarnished plant bugs.

## **WEED CONTROL**

**Fatty Acid Herbicide** [*Safer's Topgun; Safer's Superfast Patio Killer; Scotts Ecosense Pathclear*]

- Naturally occurring fatty acid compound, acts on contact to kill foliage of most plants; non-residual.
- Controls annual weeds, provides suppression or top-kill of some perennials.
- Apply in spring or summer to actively growing weeds, less than 12 cm tall (5 inches).
- Avoid spray drift onto desirable plants.

**Acetic Acid Herbicide** [*Scotts Ecoclear, Ecosense products; Green Earth products*]

- Contains the same naturally occurring acid as in vinegar.
- Acts on contact to kill foliage; non-residual.
- Uses and timing the same as fatty acid herbicide (above).

**Corn Gluten Pre-emergent Herbicide** [*TurfMaize; Scotts products; Wilson Weed-Out; WOW Without Weeds; Green It Liquid Bio-herbicide*]

- Granular or liquid form of corn gluten, suppresses germination of seeds.
- Registered to control dandelion and smooth crabgrass in lawns.

- Controls only germinating seeds, not established weeds; should not be used on new lawns.

**Chelated Iron** [*Scotts Weed-B-Gon*; *Fiesta-*]

- Selective for broadleaf weeds, moss in lawns; unlike grasses, they take up toxic levels of iron.
- Fast acting; controls dandelion, English daisy, thistles, plantains, creeping buttercup, black medic, chickweed.
- May require 2 or more applications; do not apply to drought stressed lawns.

**DISEASE CONTROL**

**Bacillus subtilis** [*Natria*; *Green EarthBio-Fungicide*] [unknown if or when available in Canada again]

- Contains biological control bacteria that attack common leaf disease fungi.
- Use for powdery mildews, *Botrytis* (grey mould) diseases, downy mildews, other leaf and stem fungi.
- Registered for many vegetable and ornamentals, including roses.
- Apply at first sign of disease infection and at 7 – 10 day intervals.

**Citric & Lactic Acid** [*Bioprotec* products are currently registered but not widely available)]

- Fermentation products of *Lactobacillus* suppress fungal and bacterial leaf diseases
- Used on foliage for powdery mildew, downy mildew, bacterial leaf spot diseases, also as a herbicide.

**Sulphur** [*Later's*, *Wilson's*, *Green Earth*, *Green Cross*, *C-I-L* brands; *Safer's Defender*]

- Sulphur particles bind with spores to prevent germination.
- Used on foliage for black knot, black spot, leaf spots, powdery mildew, rusts, apple and pear scab and others; also controls russet and rust mites.
- Use only on plants tolerant to sulphur or else leaf injury may result (check labels).
- No residual effects once dry, but toxic to beneficial mites.

**Lime Sulphur** [*Later's*, *Green Earth*, *Green Cross*, *C-I-L* brands]

- Contains a calcium sulphur compound; controls fungi, also mites and some insects; no residual effects.
- Used as dormant spray or growing season spray for fungal diseases; also for scales, spider mites, rust mites, aphids, mealybugs.
- Phytotoxic to most actively growing plants; use growing season sprays only on plants listed on label as tolerant of oil and use correct dilution rate.
- Moderate toxicity to mammals, bees, birds, toxic to beneficial mites.

**Slug & Snail Control**

**Ferric Phosphate/Ferric Sodium** [*Safer's*; *Sluggo*; *Escar-go*; *Scotts EcoSense Slug-B-Gone*]

- Contains iron mixed in an attractant bait.
- Metal ions cause slugs & snails to stop feeding, dry up and die in 3-6 days.
- Non-toxic to people, pets, birds, insects, earthworms and other wildlife. Remains active for a week even in heavy rain.
- Broadcast small amount widely over the area - do not surround plants with the bait as it attracts slugs to feed.
- Replace after prolonged heavy rain.